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HARFORD COUNTY GOVERNMENT
DIVISION OF BUILDING SERVICES
RECOMMENDED DECK CONSTRUCTION GUIDELINES

Based upon the 2015 International Residential Code Adoption- County Council Bill 15-009

This document is a synopsis of deck construction requirements as they relate to the currently adopted Harford County Building Code. This document is not all inclusive and is only intended to be a technical resource to individuals designing and constructing a deck in Harford County. It is highly recommended that individuals familiarize themselves with the provisions of the 2015 International Residential Code and County Council Bill 15-009 prior to planning the project. The provisions of the Harford County Building Code are intended to be a minimum prescriptive based design. Deviations from the prescriptive provisions will require engineering that is deemed satisfactory to the jurisdiction prior to approval. Construction of roof coverings or imposing loads from the installation of hot tubs is not covered within this document.

ADDITIONAL DECK CONSTRUCTION RESOURCES

American Wood Council – www.awc.org/codes-standards

International Residential Code Free Version - http://codes.iccsafe.org/app/book/toc/2015/I-Codes/2015%20IRC%20HTML/index.html (Reference Section R507)

GENERAL REQUIREMENTS

*All portions of decks constructed on town homes shall be a minimum of 24 inches from the property line.
*All materials, fasteners and engineered connectors shall be of approved material and compatible with any materials being used for deck construction. All materials used for deck construction shall either be approved by the code, evaluated by a recognized evaluation service or be approved for use by the building official.

FOOTINGS

Concrete footings are required under all support posts. Footings must extend a minimum of 30 inches below the final grade, have an average thickness of 8 to 12 inches and be a minimum of 16 inches in diameter. Where the footing is to support both a deck and a roof covering, footings shall be a minimum of 24 inches in diameter. Larger footings may also be required for decks with large spans between posts and/or extend more than 14 feet out from the house. All footings must be placed on stable compacted soil. Footings shall be independent of all concrete patios that are not protected from frost heave. When decks are not bolted or attached to single family dwellings the deck would be considered freestanding. Freestanding decks shall not be required to meet local frost line. Freestanding decks are still required to

have footings 16 inches in diameter but shall only extend 12 inches below grade. Subgrade support must be free of any organic materials.

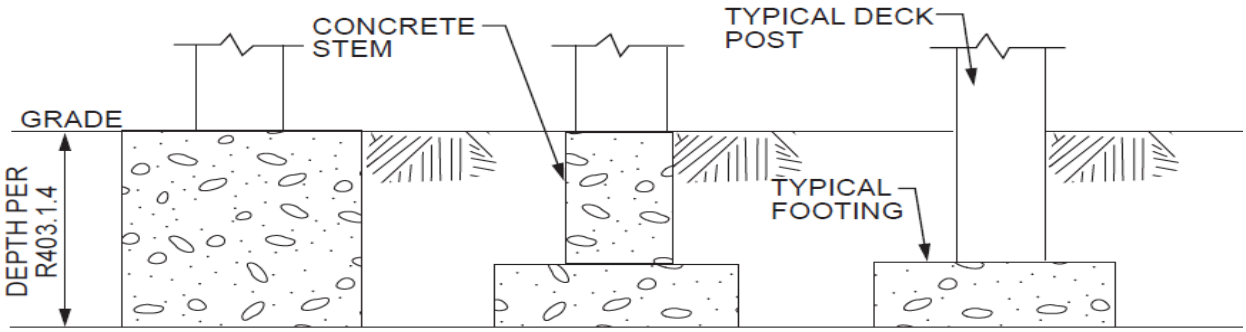
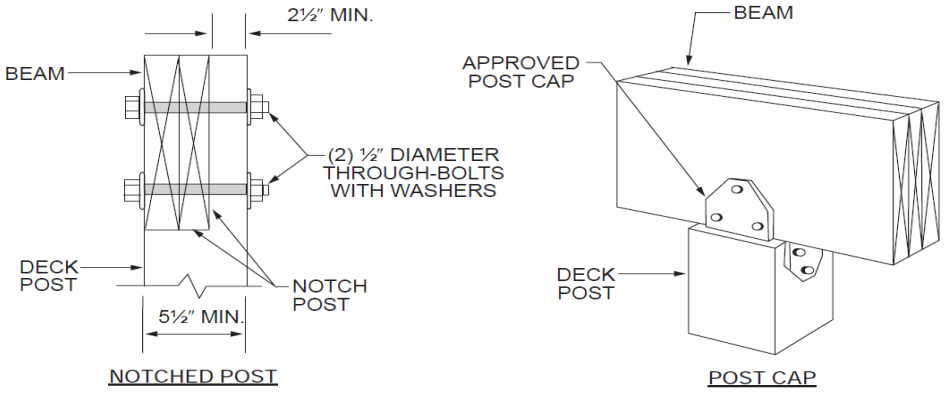


FIGURE R507.8.1
TYPICAL DECK POSTS TO DECK FOOTINGS

POSTS

Post sizes of 4x4 and 4x6 are acceptable for unsupported lengths up to 8 feet. A nominal post size of 6x6 is necessary for unsupported lengths between 8 and 14 feet. Post spacing will depend upon the size of beam selected and the total area of the deck. Use the following table for TYPICAL spacing of posts. All posts must rest on top of the footing and be secured in place. Concrete SHOULD NOT be poured around wooden posts.



For SI: 1 inch = 25.4 mm.

FIGURE R507.7.1
DECK BEAM TO DECK POST

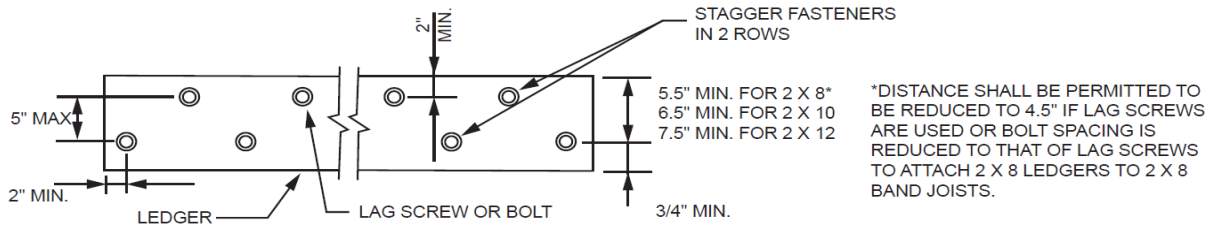
TABLE R507.8
DECK POST HEIGHT[a]

DECK POST SIZE	MAXIMUM HEIGHT[a]
4 × 4	8'
4 × 6	8'
6 × 6	14'

For SI: 1 foot = 304.8 mm.
a. Measured to the underside of the beam.

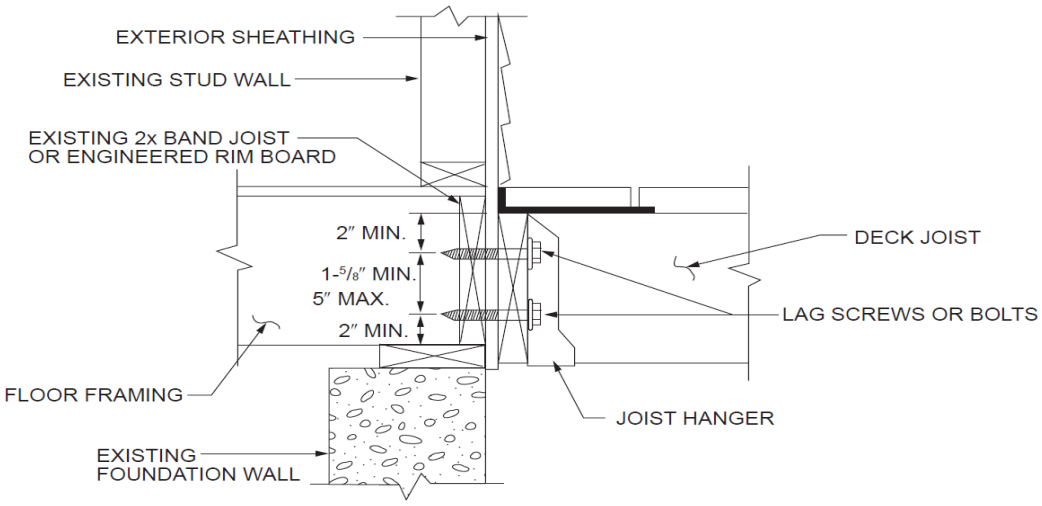
LEDGER BOARDS

Decks designed to be structurally supported by existing construction shall provide a ledger board the same size as the deck floor joists. The ledger must be secured using ½ inch carriage bolts or lags installed in accordance with table R507.2. Ledgers must have sufficient flashing to prevent moisture damage to unprotected construction. Floor systems constructed with floor trusses, I-joists or specialized construction methods may require alternative attachment methods. When using alternate connection methods inclusive of proprietary products, it is imperative that the product be used per manufacture specifications and in accordance with Jurisdictional approval. If the field inspector cannot verify what the ledger is being lagged or bolted to than a freestanding deck shall be required. When ledger boards are bolted or lagged to the dwelling, girders or other structural loads besides the 40 # uniform floor live load and 10# dead load are not allowed.



For SI: 1 inch = 25.4 mm.

FIGURE R507.2.1(1)
PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS

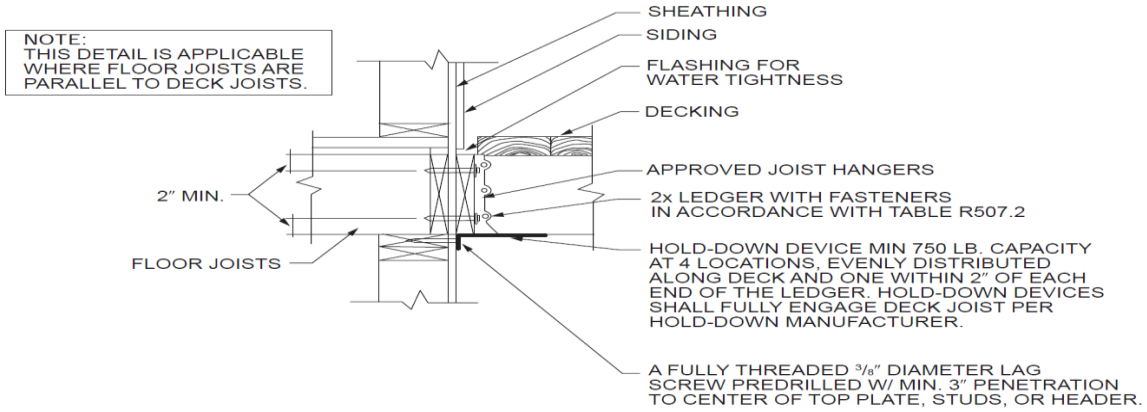


For SI: 1 inch = 25.4 mm.

FIGURE R507.2.1(2)
PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

(Deck live load = 40 psf, deck dead load = 10 psf, snow load ≤ 40 psf)

CONNECTION DETAILS	JOIST SPAN						
	6′ and less	6′1″ to 8′	8′1″ to 10′	10′1″ to 12′	12′1″ to 14′	14′1″ to 16′	16′1″ to 18′
	On-center spacing of fasteners						
1/2-inch diameter lag screw with 1/2-inch maximum sheathing[c, d]	30	23	18	15	13	11	10
1/2-inch diameter bolt with 1/2-inch maximum sheathing[d]	36	36	34	29	24	21	19
1/2-inch diameter bolt with 1-inch maximum sheathing[e]	36	36	29	24	21	18	16



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE R507.2.3(2)
DECK ATTACHMENT FOR LATERAL LOADS

PROHIBITED LEDGER ATTACHMENTS

Attachments to exterior veneers (brick, masonry, stone), hollow masonry, and to cantilevered floor overhangs or bay windows are prohibited (see Figures 17 and 18). In such cases, the non-ledger deck is required (See NON-LEDGER DECKS).

Figure 17. No Attachment to or Through Exterior Veneers (Brick, Masonry, Stone).

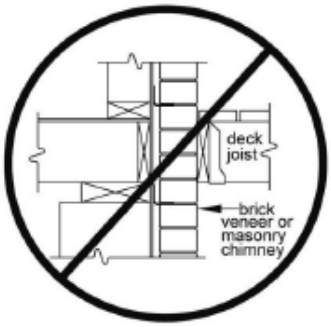


Figure 18. No Attachment to House Overhang with Ledger.

BEAMS

Beams comprised of multiple members shall be fastened together with 3 - 10d galvanized nails 24 inches on center. For multiple member beams where each member is attached to each side of the post, blocking must be provided and attached between each ply a maximum of 24 inches on center. All splices shall be aligned over post supports. Beams shall be attached to support posts with an engineered connector, 2 - ½ inch carriage bolt w/ hex nuts and washers.

TABLE R507.6
DECK BEAM SPAN LENGTHS[a, b] (ft. - in.)

SPECIES[c]	SIZE[d]	DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet)						
		6	8	10	12	14	16	18
Southern pine	2 – 2 × 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2 – 2 × 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2 – 2 × 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2 – 2 × 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3 – 2 × 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3 – 2 × 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3 – 2 × 10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3 – 2 × 12	15-3	13-3	11-10	10-9	10-0	9-4	8-10

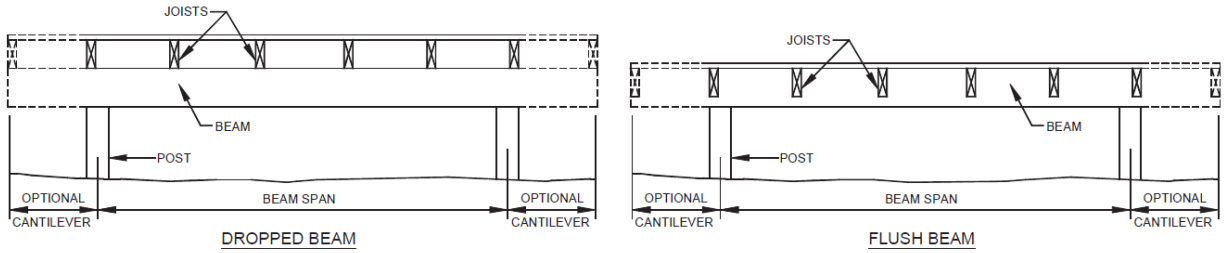


FIGURE R507.6
TYPICAL DECK BEAM SPANS

Note: The maximum cantilever for a Deck Beam is 24" unless provided with engineered documentation

FLOOR JOIST

Floor joist span and spacing shall not exceed Table R507.6 or the manufacturer's recommendations. All joists shall be toe nailed to the beam with 3 - 8d galvanized nails, they shall be attached to the ledger with approved joist hangers installed per the manufacturer's instructions and face nailed to the end band with 3 - 16d galvanized nails.

TABLE R507.4
MAXIMUM JOIST SPACING

MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM ON-CENTER JOIST SPACING	
	Perpendicular to joist	Diagonal to joist[a]
$1^1/_4$-inch-thick wood	16 inches	12 inches
2-inch-thick wood	24 inches	16 inches
Plastic composite	In accordance with Section R507.3	In accordance with Section R507.3

TABLE R507.5
DECK JOIST SPANS FOR COMMON LUMBER SPECIES[f] (ft. - in.)

SPECIES[a]	SIZE	SPACING OF DECK JOISTS WITH NO CANTILEVER[b] (inches)			SPACING OF DECK JOISTS WITH CANTILEVERS[c] (inches)		
		12	16	24	12	16	24
Southern pine	2 × 6	9-11	9-0	7-7	6-8	6-8	6-8
	2 × 8	13-1	11-10	9-8	10-1	10-1	9-8
	2 × 10	16-2	14-0	11-5	14-6	14-0	11-5
	2 × 12	18-0	16-6	13-6	18-0	16-6	13-6

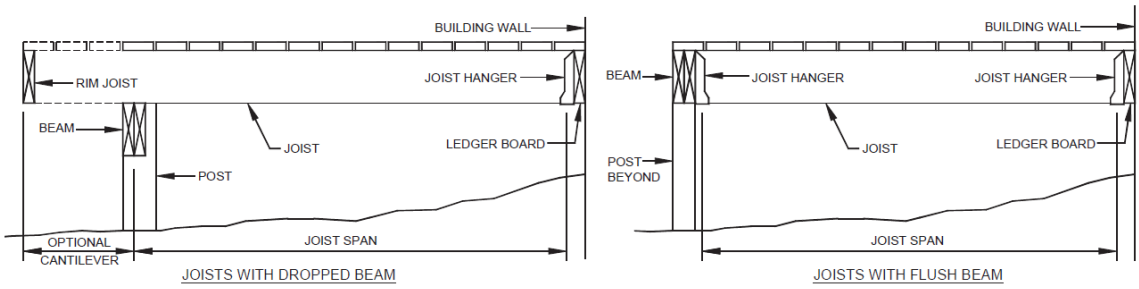
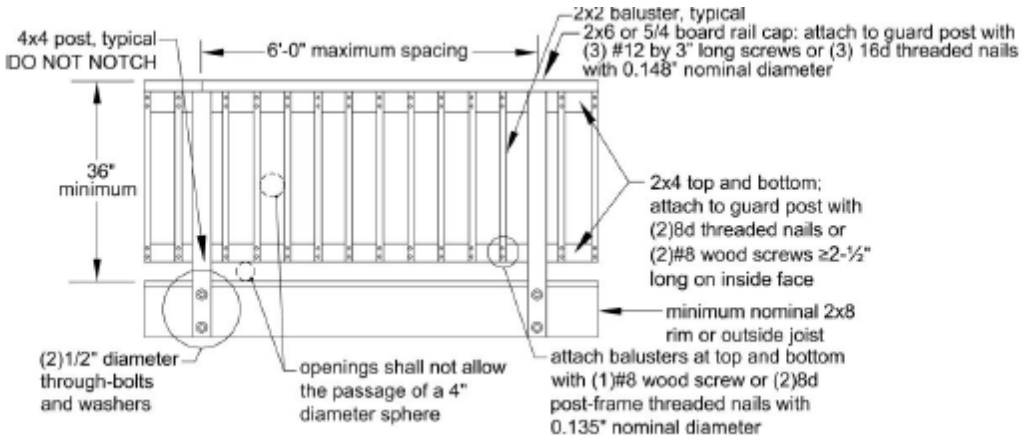


FIGURE R507.5
TYPICAL DECK JOIST SPANS

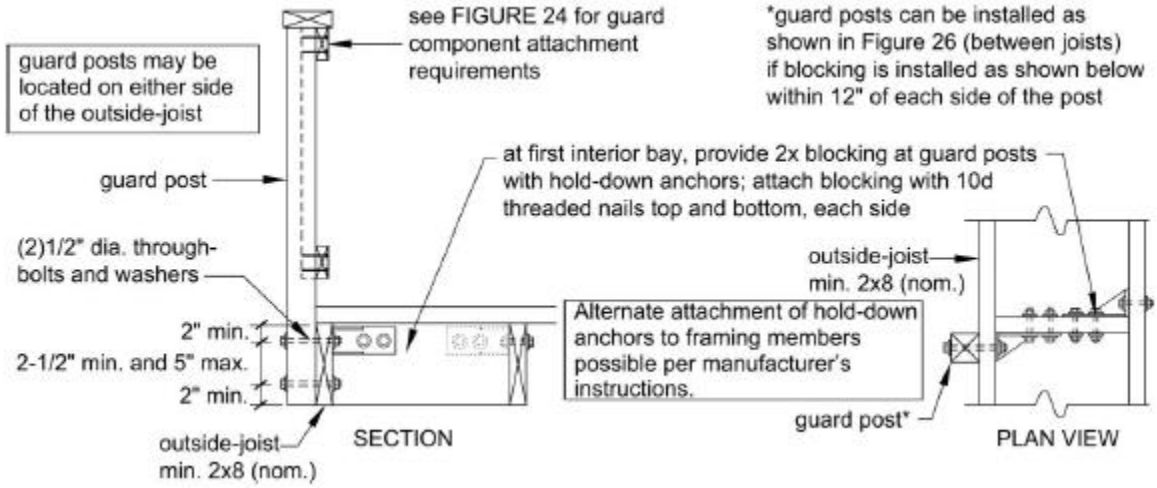
Note: The maximum cantilever for a Deck Beam is 24" unless provided with engineered documentation

GUARDRAILS

Guards are required for all elevated walking surfaces over 30" measured vertically to the floor or grade below at any point within 36" horizontally to the edge of the open side. Reference R311 of the 2015 IRC.



TYPICAL GUARDRAIL ASSEMBLY



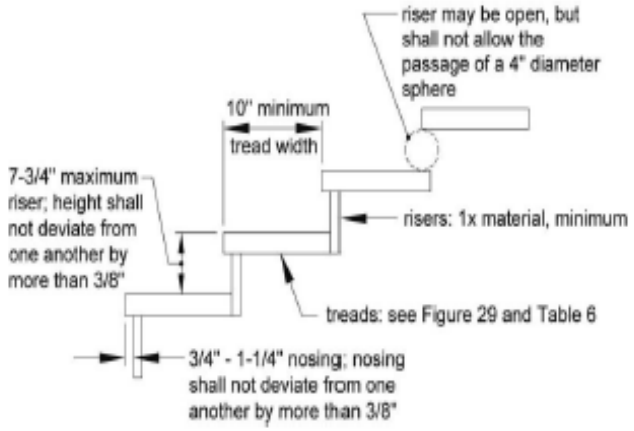
TYPICAL GUARDRAIL ASSEMBLY

Note : The notching of Deck Guardrail Posts is Prohibited

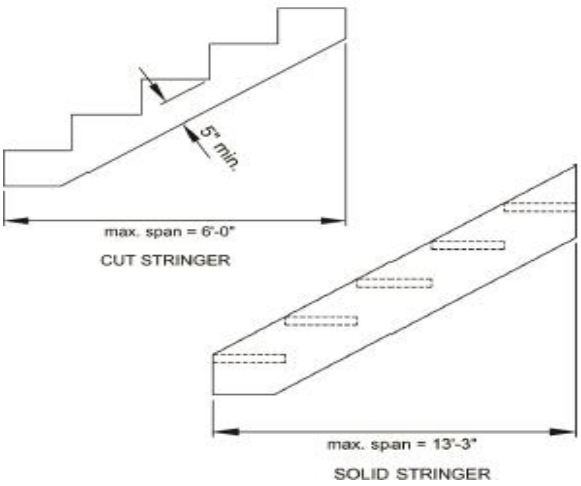
STAIRWAYS

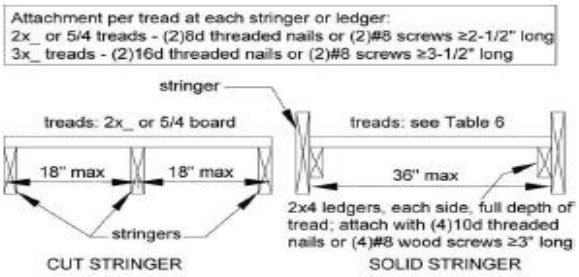
Stairways must be a minimum of 36 inches in width. Stair stringers must be cut from 2x12 dimensional treated wood or 2x10 treated wood may be used if the stringers will not be cut. A minimum of three stair stringers are required when using treated wood tread material that has a minimum thickness of 1.25 inches. A minimum of four stair stringers are required for a 36 inch wide stairway when using synthetic/composite tread material. Riser height must be uniform within 3/8 inches between the largest

and smallest riser in the stair. The maximum riser height is 7 3/4 inches. Open risers are permitted as long as a 4" sphere cannot pass through the riser area. Tread depth within the flight of stairs must be equal and must have a minimum depth of 10 inches not including the nosing. A nosing projection of not less than ¾" and not more than 1-1/4" shall be provided on stairways with solid risers. Handrails shall be provided on all flights of stairs containing 4 or more risers. Stairs that rise greater than 30 inches above the ground or adjacent walking surfaces must be provided with guards to prevent falling. Reference R311 of the 2015 IRC



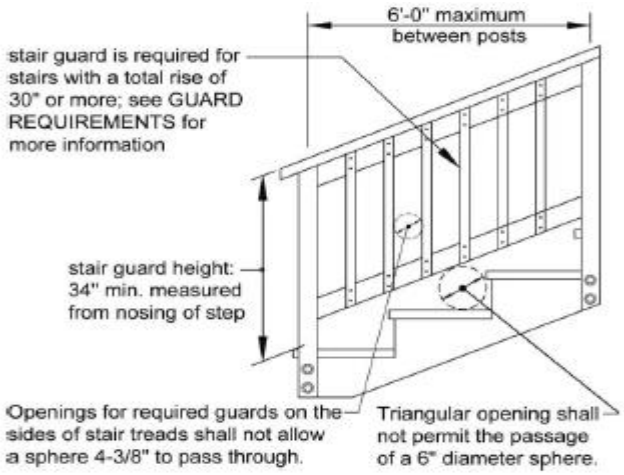
TREAD AND RISER DETAIL





STAIR STRINGER REQUIREMENTS

STAIRWAYS (Continued)



STAIR GUARD REQUIREMENTS

TYPICAL INSPECTIONS - REQUIRED

Footing - Prior to pouring concrete
Framing - For decks less than 36” above the grade
Final - After completion of the deck

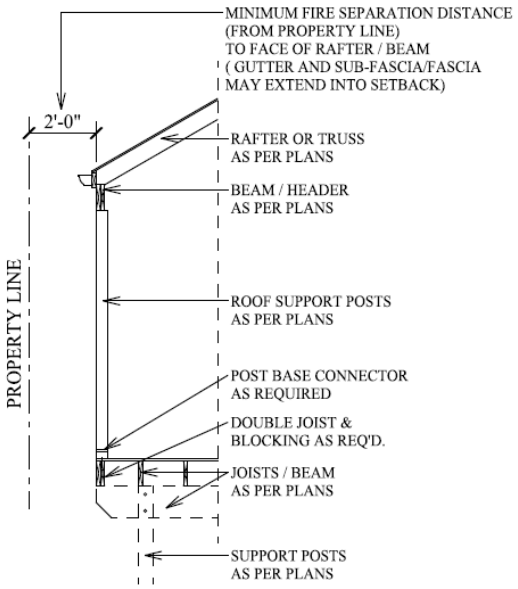


FIGURE #1

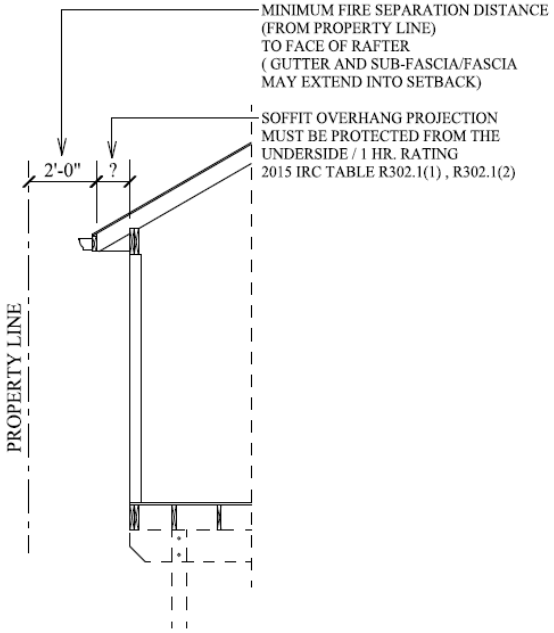


FIGURE #2

Townhouse Setback Requirements